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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,929	01/29/2004	Toshiaki Aono	Q79636	2659

23373 7590 06/13/2006

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EXAMINER	
MARTIN, LAURA E	
ART UNIT	**PAPER NUMBER**
2853	

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,929	AONO ET AL.	
	Examiner	Art Unit	
	Laura E. Martin	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

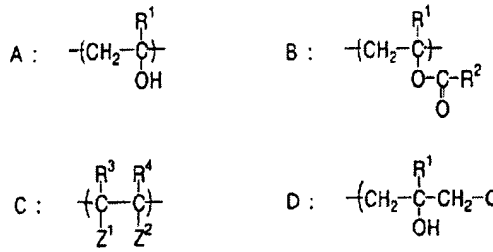
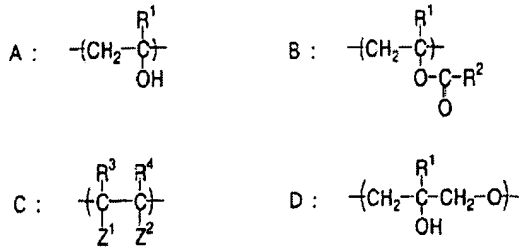
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 and 10-24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-15, 22, and 23 of copending Application No. 10/797062 in view of Hanaki et al. (US 2005/0073563) and Ito et al. (US 6509125). Although the conflicting claims are not identical, they are not patentably distinct from each other because Claims 1 and 22 of 10/767062 teaches a pigment, while claims 1 and 24 of 10/765929 teach an oil-soluble dye and an oil-soluble polymer. Claims 25 and 34 also teach a photopolymerizable monomer.

Hanaki et al. (US 2005/0073563) teaches a pigment ink and an ink with an oil-soluble dye and oil-soluble polymer [0019] and [0256]. It would have been obvious to one of ordinary skill in the art at the time of the invention, that both pigment and oil-soluble dye can be used in the ink in order to create higher quality inks that handle better in different situations.

Ito et al. teaches a photopolymerizable monomer (column 12, lines 58-67). It would have been obvious to one of ordinary skill in the art at the time of the invention, that a photopolymerizable monomercould be used in the ink as means by which to cure the ink.

This is a provisional obviousness-type double patenting rejection.

10/797062	10/765929
Claims 1 and 22: An ink-jet recording ink and an image forming method, comprising a pigment and a compound represented by the following General formula (I): R-X-$(Y)_n$-H General formula (I)wherein in General formula (I), R represents a hydrophobic group, or a group derived from a hydrophobic polymer; X represents a bivalent linking group having a hetero bond; n is an integer from 10 to 3500; and structural units of repeated Y comprise at least one structural unit represented by A, C or D, and further comprise 0 to 40% by mole of structural units represented by B:  wherein in structural units A through D, R^1 represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; R^2 represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R^3 represents a hydrogen atom or a methyl group; R^4 represents a	Claims 1, 24, 25, 34: An ink-jet recording ink and an image-forming method, comprising a oil-soluble dye and an oil soluble polymer and a compound represented by the following General formula (I): R-X-$(Y)_n$-H General formula (I)wherein in General formula (I), R represents a hydrophobic group, or a group derived from a hydrophobic polymer; X represents a divalent linking group having a hetero bond; n is an integer from 10 to 3500; and structural units of repeated Y comprise at least one structural unit represented by A, C or D, and further comprise 0 to 40% by mole of structural units represented by B:  wherein in structural units A through D, R^1 represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; R^2 represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R^3 represents a hydrogen atom or a methyl group; R^4 represents a hydrogen atom, --

hydrogen atom, --CH_3, --CH_2COOH or an ammonium salt thereof or alkali metal salt thereof, or --CN; Z^1 represents a hydrogen atom, --COOH or an ammonium salt thereof or alkali metal salt thereof, or --$CONH_2$; and Z^2 represents --COOH or an ammonium salt thereof or alkali metal salt thereof, --SO_3H or an ammonium salt thereof or alkali metal salt thereof, --OSO_3H or an ammonium salt thereof or alkali metal salt thereof, --CH_2SO_3H or an ammonium salt thereof or alkali metal salt thereof, --$CONHC(CH_3)_2CH_2SO_3H$ or an ammonium salt thereof or alkali metal salt thereof, or --$CONHCH_2CH_2CH_2N^+(CH_3)_3Cl^-$.	CH_3, --CH_2COOH or an ammonium salt thereof or alkali metal salt thereof, or --CN; Z^1 represents a hydrogen atom, --COOH or an ammonium salt thereof or alkali metal salt thereof, or --$CONH_2$; and Z^2 represents --COOH or an ammonium salt thereof or alkali metal salt thereof, --SO_3H or an ammonium salt thereof or alkali metal salt thereof, --OSO_3H or an ammonium salt thereof or alkali metal salt thereof, --CH_2SO_3H or an ammonium salt thereof or alkali metal salt thereof, --$CONHC(CH_3)_2CH_2SO_3H$ or an ammonium salt thereof or alkali metal salt thereof, or --$CONHCH_2CH_2CH_2N^+(CH_3)_3Cl^-$. Claims 25 and 34 also include a photopolymerizable monomer.
Claim 2: the hydrophobic group represented by R in General formula (I) is an aliphatic group or an aromatic group.	Claim 10: the hydrophobic group represented by R in General formula (I) is an aliphatic group or an aromatic group.
Claim 3: the hydrophobic group represented by R in General formula (I) is an aliphatic group or an aromatic group.	Claim 11: the hydrophobic group represented by R in General formula (I) is an aliphatic group or an aromatic group.
Claim 4: the hydrophobic group represented by R in General formula (I) is selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl and naphthyl groups.	Claim 12: the hydrophobic group represented by R in General formula (I) is selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl and naphthyl groups.
Claim 5: the hydrophobic group represented by R in General formula (I) is an alkyl group having 3 to 70 carbon atoms.	Claim 13: the hydrophobic group represented by R in General formula (I) is an alkyl group having 3 to 70 carbon atoms.
Claim 6: R in General formula (I) is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof.	Claim 14: R in General formula (I) is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylate, polyacrylate, polyvinyl chloride, and derivatives thereof.
Claim 7: a polymerization degree of R in the General formula (I) is from 2 to 500.	Claim 15: a polymerization degree of R in the General formula (I) is from 2 to 500.
Claim 8: the hetero bond in X in the General formula (I) is selected from the group consisting of an ether bond, an ester bond, a thioether bond, a thioester bond, a sulfonyl bond, an amide bond, an imide bond, a sulfonamide bond, a urethane bond, a urea bond, and a thiourea bond.	Claim 16: the hetero bond in X in the General formula (I) is selected from the group consisting of an ether bond, an ester bond, a thioether bond, a thioester bond, a sulfonyl bond, an amide bond, an imide bond, a sulfonamide bond, a urethane bond, a urea bond, and a thiourea bond.
Claim 9: the structural unit A is a structural unit derived from vinyl alcohol, α-methylvinyl alcohol, or .alpha.-propylvinyl alcohol.	Claim 17: the structural unit A is a structural unit derived from vinyl alcohol, α-methylvinyl alcohol, or .alpha.-propylvinyl alcohol.
Claims 10 and 23: the structural unit B is a structural unit derived from vinyl acetate, vinyl formate, vinyl propionate, or an .alpha.-substitution product thereof.	Claim 18: the structural unit B is a structural unit derived from vinyl acetate, vinyl formate, vinyl propionate, or an .alpha.-substitution product thereof.
Claim 11: the structural unit C is a structural unit derived from acrylic acid, methacrylic acid, itaconic acid, maleic acid, an ammonium salt thereof or a metal salt thereof.	Claim 19: the structural unit C is a structural unit derived from acrylic acid, methacrylic acid, itaconic acid, maleic acid, an ammonium salt thereof or a metal salt thereof.
Claim 12: the structural unit D is selected from the group consisting of -$CH_2CH(OH)CH_2O$-, -$CH_2C(CH_3)(OH)CH_2O$-, and -$CH_2C(C_2H_5)(OH)CH_2O$-.	Claim 20: the structural unit D is selected from the group consisting of -$CH_2CH(OH)CH_2O$-, -$CH_2C(CH_3)(OH)CH_2O$-, and -$CH_2C(C_2H_5)(OH)CH_2O$-.

Claim 13: a mass ratio of R to (Y).sub.n in General formula (I) is from 0.01 to 2, the mass ratio being calculated using atomic weights of respective atoms in R and $(Y)_n$.	Claim 21: a mass ratio of R to (Y).sub.n in General formula (I) is from 0.01 to 2, the mass ratio being calculated using atomic weights of respective atoms in R and $(Y)_n$.
Claim 14: $(Y)_n$ in General formula (I) comprises, as a structural unit thereof, ethylene, propylene, isobutene, acrylonitrile, acrylamide, methacrylamide, N-vinylpyrrolidone, vinyl chloride or vinyl fluoride.	Claim 22: $(Y)_n$ in General formula (I) comprises, as a structural unit thereof, ethylene, propylene, isobutene, acrylonitrile, acrylamide, methacrylamide, N-vinylpyrrolidone, vinyl chloride or vinyl fluoride.
Claim 15: ink comprising water.	Claim 23: ink comprising water.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 17, 19, and 20 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: in claim 1, applicant claims "structural units of repeated Y comprise at least one structural unit represented by A, C, or D", and in claims 9, 11, and 12, applicant claims A, C, and D independently. Due to the word "or", not all three structural units are necessary in the invention, thus claims 9, 11, and 12 are not all necessarily part of the invention.

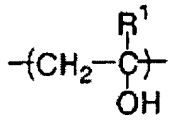
Claim Rejections - 35 USC § 103

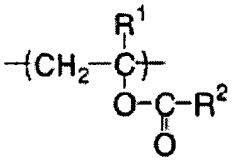
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

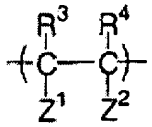
> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

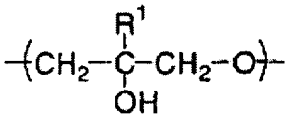
Claims 1-5, 9-19, 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942) in view of Ishizuka et al. (JP 2001181548) and Kimura et al. (US 6521031).

Kubodera teaches an inkjet recording ink and image forming method [0001], comprising a compound represented by the following general formula (I): R-X-$(Y)_n$-H, wherein the general formula (I), R represents a hydrophobic group [0005], or a group derived from a hydrophobic polymer; n is an integer from 10 to 3500 [0005]; and structural units of repeated Y comprise at least one structural unit represented by A, C, or D [0005], and further comprise 0-40% by mole of structural units represented by B [0045]:

A : 

B : 

C : 

D : 

wherein in structural units A through D, R^1 represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; R^2 represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R^3 represents a hydrogen atom or a methyl group; R^4 represents a hydrogen atom, $-CH_3$, $-CH_2COOH$, or an ammonium salt thereof or an alkali metal salt thereof or –CN; Z^1 (X) represents a hydrogen atom, -COOH, or an ammonium salt thereof or alkali metal salt thereof, or $–CONH_2$; and Z^2 (Y) represents –

COOH or an ammonium salt thereof or alkali metal salt thereof, SO3H or an ammonium salt thereof or alkali metal salt thereof, -OSO_3H or an ammonium salt thereof or alkali metal salt thereof, -CH_2SO_3H or an ammonium salt thereof or alkali metal thereof, -$CONHC(CH_3)_2CH_2SO_3H$ or an ammonium salt thereof or alkali metal salt thereof, or –$CONHCH_2CH_2CH_2N^+(CH_3)_3Cl^-$ [0007]. Kubodera also teaches the hydrophobic group represented by R in general formula (I) is an aliphatic group or an aromatic group, alicyclic group, is selected from the group consisting of alkyl, alkenyl, alkynyl, phenyl, and naphthyl groups [0030]. Kubodera also teaches the hydrophobic group represented by R in general formula (I) is an alkyl group having 3 to 70 carbon atoms [0031] wherein polymerization degree of R in the general formula (I) is from 2 to 500 [0032]; R is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof [0032]. Kubodera also teaches the structural unit A is a structural unit derived from vinyl alcohol, α-methylvinyl alcohol or α-propylvinyl alcohol [0043]; the structural unit B is a structural unit derived from vinyl acetate, vinyl formate, vinyl propionate, or an α-substitution product thereof [0043]; the structural unit C is a structural unit derived from acrylic acid, methacrylic acid, itaconic acid, maleic acid, an ammonium salt thereof or a metal salt thereof [0043]. Kubodera also teaches a mass ratio of R to $(Y)_n$ in general formula (I) is from 0.01 to 2, the mass ratio being calculated using atomic weights of respective atoms in R to $(Y)_n$ [0048]; $(Y)_n$ comprises, as structural units thereof, ethylene, propylene, isobutene, acrylonitrile,

acrylamide, methacrylamide, N-vinylpyrrolidone, vinyl chloride, or vinyl fluoride [0046]. Kubodera also teaches the ink further comprising water [0073].

Kubodera does not teach X representing a bivalent linking group having a hetero bond or the hetero bond in general formula (I) selected from the group consisting of an ether bond, an ester bond, a thioether bond, a thioester bond, a sulfonyl bond, an amide bond, an imide bond, a sulfonamide bond, a urethane bond, a urea bond, and a thiourea bond. Kubodera also does not teach colored fine particles including an oil-soluble dye and an oil-soluble polymer, wherein the oil soluble polymer has a dissociable group, begin at least one of a carboxyl group or a sulfonic acid group, in an amount of 0.2 to 4.0 mmol/g, the colored fine particles being prepared by adding to an aqueous phase an organic phase including the oil-soluble dye, selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye, and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture, and the ink having a viscosity of 30 mPa*s.

Kimura et al. teaches X representing a bivalent linking group having a hetero bond or the hetero bond in general formula (I) selected from the group consisting of an ether bond, an ester bond, a thioether bond, a thioester bond, a sulfonyl bond, an amide bond, an imide bond, a sulfonamide bond, a urethane bond, a urea bond, and a thiourea bond (C6, L15-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kubodera with the disclosure of Kimura et al. in order to provide for a stable ink composition.

Ishizuka et al. teaches colored fine particles including an oil-soluble dye and an oil-soluble polymer (abstract), wherein the oil soluble polymer has a dissociable group, begin at least one of a carboxyl group or a sulfonic acid group, in an amount of 0.2 to 4.0 mmol/g [0011], the colored fine particles being prepared by adding to an aqueous phase an organic phase including the oil-soluble dye [0059], selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye [0008-0009], and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture [0059], and the ink having a viscosity of 30 mPa*s [0086].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kubodera with the disclosure of Ishizuka et al. in order to create a more stable ink for printing.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ishizuka et al. (JP 2001181548) and Kimura et al. (US 6521031) in further view of Yabuki et al. (US 20020067399).

Kubodera, Ishizuka et al., and Kimura et al. teach the ink of claim 1; however, none disclose the ink wherein the oil soluble dye is contained in an amount of 0.5-50%

by mass based on a total mass of the ink or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye.

Yabuki et al. teaches the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink [0070] or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye [0199].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosures of Kubodera, Ishizuka et al., and Kimura et al. with that of Yabuki et al. in order to create a more stable ink composition.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ishizuka et al. (JP 2001181548) and Kimura et al. (US 6521031) in further view of Ishizuka et al. (US 2002088294).

Kubodera, Ishizuka et al. (548), and Kimura et al. teach the ink of claim 1; however, none disclose the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles.

Ishizuka et al. (294) teaches the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosures of Kubodera, Ishizuka et al. (548), and Kimura et al. with that of Ishizuka et al. (294) in order to create a more stable ink composition.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ishizuka et al. (JP 2001181548) and Kimura et al. (US 6521031) in further view of Leppard et al. (US 60480660).

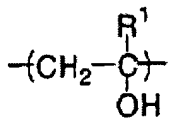
Kubodera, Ishizuka et al. and Kimura teach the ink of claim 1; however, none of these references teach a structural unit D selected from the group consisting of –$CH_2CH(OH)CH_2O$-, -$CH_2C(CH_3)(OH)CH_2O$-, and –$CH_2C(C_2H_5)(OH)CH_2O$-.

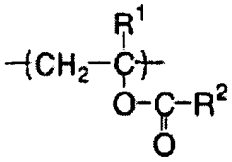
Leppard et al. teaches a structural unit D selected from the group consisting of –$CH_2CH(OH)CH_2O$-, -$CH_2C(CH_3)(OH)CH_2O$-, and –$CH_2C(C_2H_5)(OH)CH_2O$- (C2, L54).

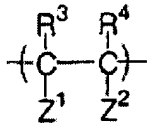
It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the invention of claim 1 with the disclosure of Leppard et al. in order to provide for a stable ink composition.

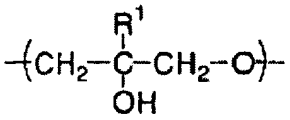
Claims 25, 27, 29 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942) in view of Ishizuka et al. (JP 2001181548) and Ito et al. (US 6509125).

Kubodera teaches an inkjet recording ink and image forming method [0001], comprising a pigment and a compound represented by the following general formula (I): R-X-$(Y)_n$-H, wherein the general formula (I), R represents a hydrophobic group [0005], or a group derived from a hydrophobic polymer; n is an integer from 10 to 3500 [0005]; and structural units of repeated Y comprise at least one structural unit represented by A, C, or D [0005], and further comprise 0-40% by mole of structural units represented by B [0045]:

A : 

B : 

C : 

D : 

wherein in structural units A through D, R^1 represents a hydrogen atom or an alkyl group having 1 to 6 carbon atoms; R^2 represents a hydrogen atom or an alkyl group having 1 to 10 carbon atoms; R^3 represents a hydrogen atom or a methyl group; R^4 represents a hydrogen atom, $-CH_3$, $-CH_2COOH$, or an ammonium salt thereof or an alkali metal salt thereof or –CN; Z^1 (X) represents a hydrogen atom, -COOH, or an ammonium salt thereof or alkali metal salt thereof, or $–CONH_2$; and Z^2 (Y) represents –COOH or an ammonium salt thereof or alkali metal salt thereof, SO3H or an ammonium salt thereof or alkali metal salt thereof, $-OSO_3H$ or an ammonium salt thereof or alkali metal salt thereof, $-CH_2SO_3H$ or an ammonium salt thereof or alkali metal thereof, $-CONHC(CH_3)_2CH_2SO_3H$ or an ammonium salt thereof or alkali metal salt thereof, or $–CONHCH_2CH_2CH_2N^+(CH_3)_3Cl^-$ [0007]. Kubodera also teaches the hydrophobic group represented by R in general formula (I) is an aliphatic group, aromatic group, or an alicyclic group [0030] and R is a group derived from at least one hydrophobic polymer selected from the group consisting of polystyrene, polymethacrylic acid ester, polyacrylic acid ester, polyvinyl chloride, and derivatives thereof [0032].

Kubodera does not teach X representing a divalent linking group having a hetero bond or the hetero bond in general formula (I) Kubodera also does not teach colored fine particles including an oil-soluble dye and an photopolymerizable monomer.

Kimura et al. teaches X representing a bivalent linking group having a hetero bond or the hetero bond in general formula (I) selected from the group consisting of an ether bond, an ester bond, a thioether bond, a thioester bond, a sulfonyl bond, an amide bond, an imide bond, a sulfonamide bond, a urethane bond, a urea bond, and a thiourea bond (C6, L15-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kubodera with the disclosure of Kimura et al. in order to provide for a stable ink composition.

Ito et al. teaches colored fine particles including an oil-soluble dye (C2, L25-36) and a photopolymerizable monomer (C13, L48-60).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Kubodera with the disclosure of Ishizuka et al. in order to create a more stable ink for printing.

Claims 26, 29, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ito et al. (US 6509152) and Kimura et al. (US 6521031) in further view of Ishizuka et al. (US 2001181548).

Kubodera, Ito et al., and Kimura et al. teach the ink of claim 1; however, none teach the colored fine particles are prepared by adding to an aqueous phase an organic phase including oil-soluble dye, and emulsifying and dispersing a resultant mixture;

wherein the oil-soluble dye is selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye, and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture, and the ink having a viscosity of 30 mPa*s.

Ishizuka et al. teaches the colored fine particles are prepared by adding to an aqueous phase an organic phase including oil-soluble dye, and emulsifying and dispersing a resultant mixture [0059]; wherein the oil-soluble dye is selected from the group consisting of an anthraquinone dye, naphthoquinone dye, styryl dye, indoaniline dye, azo dye, nitro dye, coumarin dye methane dye, porphyrin dye, azaporphyrin dye, and phthalocyanine dye [0008-0009], and the oil-soluble polymer, and emulsifying and dispersing a resultant mixture, and the ink having a viscosity of 30 mPa*s [0086].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of claim 1 with the disclosure of Ishizuka et al. in order to provide a more stable ink composition.

Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ito et al. (JP 6509125) and Kimura et al. (US 6521031) in further view of Yabuki et al. (US 20020067399).

Kubodera, Ito et al., and Kimura et al. teach the ink of claim 1; however, none disclose the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by

mass based on a total mass of the ink or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye.

Yabuki et al. teaches the ink wherein the oil soluble dye is contained in an amount of 0.5-50% by mass based on a total mass of the ink [0070] or wherein the oil soluble polymer is contained in an amount of 10-500% by mass based on a mass of the oil soluble dye [0199].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosures of Kubodera, Ito et al., and Kimura et al. with that of Yabuki et al. in order to create a more stable ink composition.

Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubodera (JP 10095942), Ito et al. (JP 6509125) and Kimura et al. (US 6521031) in further view of Ishizuka et al. (US 2002088294).

Kubodera, Ito et al., and Kimura et al. teach the ink of claim 1; however, none disclose the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles.

Ishizuka et al. teaches the compound represented by formula (I) contained in an amount of 1 to 50 % by mass based on a mass of colored fine particles (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the disclosures of Kubodera, Ito et al., and Kimura et al. with that of Ishizuka et al. in order to create a more stable ink composition.

Response to Arguments

Applicant's arguments filed 3/31/06 have been fully considered but they are not persuasive.

Applicant argues that it would not have been obvious to one having ordinary skill in the art to modify the invention taught by Kubodera by replacing a water-soluble dye with a oil-soluble dye as taught by Kimura or Ishizuka. Examiner argues that this would be obvious, as in prior inventions, both oil-soluble and water-soluble dyes have been presented as being likely colorants; such is the case with Taguchi (US 20030061965). Examiner also argues that it would have been obvious to modify the invention taught by Kubodera by adding the oil-soluble polymer taught by Ishizuka as it would improve the quality of the solution as well as increase the ink stability.

Applicant also argues that the Office Action fails to provide grounds as to why it would have been obvious to one skilled in the art to replace water-soluble dye of Kubodera with colored fine particles taught by Kimura and Ishizuka. Examiner argues what has already been stated in the previous Action that using oil-soluble colored particles increases the ink stability.

Applicant also argues that Kimura fails to teach X of general formula (I), which is a bivalent linking group having a hetero bond; however, in column 6, lines 15-27, Kimura teaches Q, which is a divalent hetero ring that can be used as a hetero group.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura E. Martin whose telephone number is (571) 272-2160. The examiner can normally be reached on Monday - Friday, 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Laura E. Martin

6/9/06

MANISH S. SHAH
PRIMARY EXAMINER